

# **1.0 PURPOSE AND NEED**

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## **1.1 INTRODUCTION**

The United States Air Force (Air Force), Air Combat Command (ACC), proposes a Force Structure Change at Shaw Air Force Base (AFB), South Carolina. This environmental assessment (EA) has been prepared to analyze the potential environmental consequences associated with the proposed action and alternatives in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321 *et seq.*) and its implementing regulations.

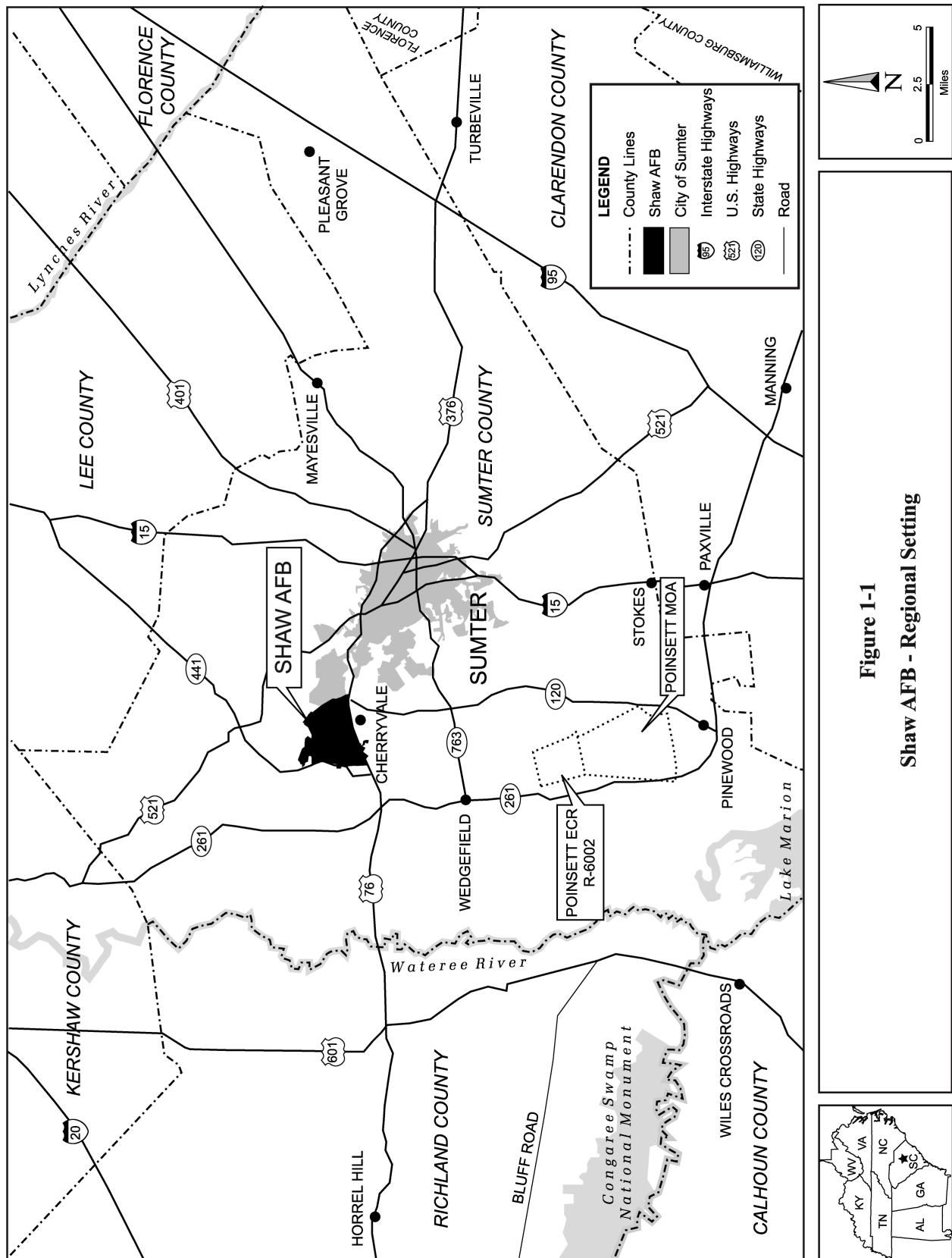
Section 1.2 provides background information on Shaw AFB. The purpose and need for the proposed action are described in Section 1.3. A detailed description of the proposed action, a restructure alternative, and the No-Action alternative is provided in Chapter 2.0. Chapter 3.0 describes the existing conditions of various environmental resources that could be affected by the proposed action and alternatives. Chapter 4.0 describes how those resources would be affected by implementation of the proposed action, the restructure alternative, or the No-Action alternative. Chapter 5.0 addresses potential cumulative effects of the proposed action and alternatives, in conjunction with other recent past, current, and future actions that may be implemented in the region of influence (ROI).

## **1.2 BACKGROUND**

Shaw AFB is located in the east central part of South Carolina, approximately 35 miles east of the capital city of Columbia. The base is located within the city limits of Sumter and is 10 miles west of the city's center (Figure 1-1). The city of Sumter is surrounded by Sumter County, which is naturally bounded by the Wateree River to the west and the Lynches River to the east. The county has a mixture of farmland, forested areas and wetlands with the main population center in and around the city of Sumter. Associated with the base is the 12,400-acre Poinsett Electronic Combat Range (ECR), located approximately 15 miles from the base in the vicinity of the town of Wedgefield, South Carolina.

The 20<sup>th</sup> Fighter Wing (FW), the base host wing, operates the 55<sup>th</sup>, 77<sup>th</sup>, 78<sup>th</sup> and 79<sup>th</sup> Fighter Squadrons, and has the primary mission to provide, project, and sustain combat ready air forces. Headquarters 9<sup>th</sup> Air Force is the major tenant at Shaw AFB. General goals of the base are to sustain the resources and relationships deemed appropriate to pursue national interests, and provide for the command, control, and communications necessary to execute the missions of the Air Force, ACC, 9<sup>th</sup> Air Force, and the 20<sup>th</sup> FW.

Shaw's primary mission aircraft is the F-16 "Fighting Falcon" Block 50 aircraft, a single-seat, single-engine, all-weather, multirole tactical fighter designed to perform in both air-to-air and air-to-ground roles. The F-16 Block 50 aircraft is powered by a single F110-GE-129 turbofan engine with an afterburner. The F-16 is capable of flying at twice the speed of sound (Mach 2), and can operate at altitudes over 50,000 feet. The F-16 has nine stations that can be used to mount additional fuel tanks, air-to-air munitions, air-to-ground munitions, or electronic warfare pods. The F-16 is also armed with a 20 millimeter (mm) cannon mounted in the fuselage.



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The roles of the F-16 Block 50 aircraft include air-to-air combat, delivery of air-to-surface munitions, and Suppression of Enemy Air Defenses (SEAD). SEAD is accomplished by launching High-Speed Anti-Radiation Missiles (HARM) at enemy radar threats. Training requirements also include low-level navigation on Military Training Routes (MTRs) to access Military Operations Areas (MOAs) for air-to-air combat training and Training Ranges for air-to-ground ordnance delivery. Figure 1-2 shows the airspace managed and/or used by Shaw AFB, including MOAs and MTRs designated as an Instrument Route (IR) or Visual Route (VR).

### **1.3 PURPOSE AND NEED**

The purpose of this action is to realign units at Shaw AFB to provide more capability to the Air Force's Expeditionary Aerospace Force (EAF) Construct. The EAF Construct grew out of the need for the United States to deploy forces worldwide despite the reduction in United States overseas basing and personnel. Under the EAF, the Air Force has divided its forces into 10 Aerospace Expeditionary Forces (AEFs) and 2 Aerospace Expeditionary Wings (AEWs) to make worldwide deployments more predictable and manageable. An AEF is a "packaged" group of different types of aircraft with a mix of capabilities suited to the tasking to overseas locations for about 90 days. These AEFs consist of wings or squadrons from multiple United States bases, and may operate as a unit or be integrated with other forces overseas. Pre- and/or post-deployment training at locations other than a "home" base also occurs for about another 30 days out of the year. Squadrons or wings are rotated into the AEF program on a 15-month cycle.

The need for the proposed action is based on experience with the employment and operation of the AEF. Experience has shown that 24 Primary Mission Aircraft Inventory (PMAI) squadrons generate between 50 to 80 percent more capacity than an 18 PMAI squadron. Squadrons with 18 PMAI have less flexibility for scheduled maintenance, unscheduled maintenance, and phase flow. The 18 PMAI squadrons are frequently unable to generate the necessary front line plus spares to fly the scheduled flying program. The proposed action would allow the most flexible weapons systems to continue in operational service with the cost saving benefits associated with common equipment and support personnel. This action is part of the Common Configuration Implementation Program (CCIP) being implemented to improve the combat capability of the active duty F-16 fleet.



## 2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

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This section describes the proposed action to implement force structure policy changes with new F-16 Block 50 aircraft. This section also describes Alternative A, which is to implement force structure changes without the new aircraft (i.e., reallocating current Shaw AFB aircraft), and Alternative B, No-Action, which would not implement force structure policy changes and maintain the current structure.

### 2.1 PROPOSED ACTION

Shaw AFB is home to 72 PMAI aircraft which is currently equipped with four squadrons of F-16 Block 50 aircraft - three 18 PMAI squadrons and one 24 PMAI squadron. Under the proposed action, two squadrons would each receive six additional new F-16 Block 50 aircraft. A third squadron would maintain its current inventory of 24 F-16 Block 50 aircraft. The fourth squadron would be deactivated and 18 F-16 Block 50 aircraft would be transferred from Shaw AFB. This action adds 12 newer F-16 Block 50 aircraft to the 20<sup>th</sup> FW and removes 18 F-16s for an overall change of six fewer aircraft. Table 2-1 depicts the numbers of aircraft by squadron under the proposed action, Alternative A, and Alternative B, the No-Action alternative. No facility construction or modification would be required as a result of this force structure change. The proposed force structure change would be implemented in the third quarter of Fiscal Year (FY) 2003.

**Table 2-1. Summary of Aircraft Mix at Shaw AFB**

	<i>Proposed Action</i>	<i>Alternative A</i>	<i>Alternative B: No-Action Alternative</i>
F-16 Block 50- Squadron 1	24	24	18
F-16 Block 50- Squadron 2	24	24	18
F-16 Block 50- Squadron 3	24	24	24
F-16 Block 50- Squadron 4	0	0	18
Total	72	72	78

#### 2.1.1 Aircraft Operations

The realigned squadrons would operate as they do today in existing airspace. Two terms are used throughout this EA to describe aircraft operations: sortie and sortie-operation. Each has a distinct meaning and commonly applies to a specific set of activities in particular airspace areas:

- A sortie consists of a single military aircraft flight from takeoff through landing.
- A sortie-operation is defined as the use of one airspace unit (e.g., overland MOA or offshore Warning Area) by one aircraft. Sortie-operations apply to flight activities

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outside the aerodrome. Each time a single aircraft conducting a sortie flies in a different airspace unit, one sortie-operation is counted for that unit.

The 20<sup>th</sup> FW trains for air-to-air combat in MOAs and offshore Warning Areas located along the Eastern seaboard. Figure 1-2 identifies four MOAs (Gamecock C, Gamecock D, Gamecock I, Bulldog A/B) and the two Warning Areas (W-161 and W-177), where sortie-operations are conducted by the 20<sup>th</sup> FW for training and would be affected with the implementation of the proposed action. Sortie-operations along MTRs occur in eight IRs and 17 VRs as presented in Figure 1-2 and Table 2-2.

For air-to-ground training activities, the 20<sup>th</sup> FW uses the nearby Poinsett ECR (see Figure 1-2) and its associated airspace (R-6002). This restricted area designates airspace in which training activities present potential hazards to nonparticipating aircraft. This area supports either aerial gunnery or air-to-ground ordnance delivery.

### **2.1.2 Manpower Requirements**

Shaw AFB currently supports approximately 6,000 full-time military and civilian personnel. The proposed force structure change would involve a change in manpower requirements resulting in an overall decrease of approximately 300 personnel at Shaw AFB. Table 2-3 depicts the current and proposed manpower authorizations under the proposed action, Alternative A, and Alternative B, the No-Action alternative.

### **2.1.3 Ordnance, Chaff and Flare Use**

The 20<sup>th</sup> FW currently performs munitions delivery training at Poinsett ECR. Table 2-4 reflects ordnance that will be delivered as part of 20<sup>th</sup> FW air-to-ground training requirements under the proposed action and alternatives. The annual use of ordnance under the proposed action and Alternative A represents a reduction from current use (shown as Alternative B).

### **2.1.4 Summary of the Proposed Action**

In summary, the proposed action includes the following elements:

- Deactivation of one 18 PMAI squadron
- Realignment of two 18 PMAI squadrons to 24 PMAI squadrons by adding 6 new F-16 Block 50 aircraft each
- Maintenance of existing 24 PMAI squadron
- Reduction of manpower authorizations by approximately 300

## **2.2 ALTERNATIVE A**

Alternative A is similar to the proposed action with respect to realignment of the squadrons, manpower requirements, and munitions use. However, it involves redistribution of the existing aircraft from the deactivated squadron rather than adding newly manufactured F-16 Block 50 aircraft. Twelve of the 18 aircraft from the deactivated squadron would be assigned to

**Table 2-2. Annual Sortie-Operations in 20<sup>th</sup> FW Managed/Utilized Airspace**

<i>Airspace Unit</i>	<i>CURRENT USE (AND ALTERNATIVE B)</i>		<i>PROJECTED USE PROPOSED ACTION AND ALTERNATIVE A</i>		<i>Reduction in F-16 Use</i>
	<i>All Aircraft Day/Night</i>	<i>F-16 Contribution Day/Night</i>	<i>All Aircraft Day/Night</i>	<i>F-16 Contribution Day/Night</i>	
IR-002	116/0	65/0	111/0	60/0	5
IR-012	225/0	19/0	224/0	18/0	1
IR-074	69/0	19/0	67/0	17/0	2
IR-089	60/0	24/0	58/0	22/0	2
IR-090	41/0	4/0	41/0	4/0	0
IR-721/VR-1721	268/0	56/0	264/0	52/0	4
IR-726/VR-1726	174/0	56/0	170/0	52/0	4
IR-743/VR-1743	134/0	48/0	131/0	45/0	3
VR-058	242/0	128/0	232/0	118/0	10
VR-085	1445/0	322/0	1420/0	297/0	25
VR-086	92/0	32/0	90/0	30/0	2
VR-087	1143/12	578/6	1098/11	533/5	46
VR-088	955/10	700/7	900/9	645/6	56
VR-092	207/0	139/0	196/0	128/0	11
VR-093	189/0	74/0	182/0	67/0	7
VR-094	222/0	126/0	212/0	116/0	10
VR-095	419/0	250/0	400/0	231/0	19
VR-096	407/0	10/0	406/0	9/0	1
VR-097	690/0	186/0	676/0	172/0	14
VR-1059	1399/30	745/0	1342/30	688/0	57
VR-1060	721/7	64/1	716/7	59/1	5
VR-1061	183/10	20/0	182/10	19/0	1
W-161	3692/39	2130/0	3528/39	1966/0	164
W-177	4155/250	2550/50	3949/255	2344/55	211
Bulldog A/B	7054/71	5996/60	6581/77	5523/66	473
Gamecock B	0/0	0/0	0/0	0/0	-
Gamecock C	4268/42	854/8	4194/42	780/8	74
Gamecock D	4842/48	3631/36	4561/47	3350/35	282
Gamecock I	2230/22	111/1	2221/22	102/1	9
R-6002	5025/160	3575/71	4737/155	3287/66	293

**Table 2-3. Current and Proposed Manpower Requirements at Shaw AFB**

	<i>ACC and Tenants</i>	<i>Proposed Action</i>	<i>Alternative A</i>	<i>Alternative B: No-Action</i>	<i>Reduction</i>
Officer	618	601	601	618	17
Enlisted	4,886	4,575	4,575	4,886	311
Civilians	487	487	487	487	0
Total	5,991	5,663	5,663	5,991	328

**Table 2-4. Annual Use of Munitions, Chaff and Flares at Poinsett ECR (R-6002)**

	<i>Proposed Action</i>	<i>Alternative A</i>	<i>Alternative B: No-Action<sup>1</sup></i>	<i>Reduced Use</i>
BDU-33	103,364	103,364	111,978	8,614
20mm Cannon	1,148,492	1,148,492	1,244,200	95,708
Inert Bombs	764	764	828	64
Chaff	22,467	22,467	24,341	1,874
Flares	16,315	16,315	17,676	1,361

Note: 1. Current use under 78 PMAI 20<sup>th</sup> FW.

Source: Personal communication, Markham 2002.



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the other 18 PMAI squadrons with the remaining six aircraft transferred from Shaw AFB. Like the proposed action, this realignment of the 20<sup>th</sup> FW would still result in 72 PMAI, with an overall reduction of 6 aircraft. In summary, Alternative A includes the following elements:

- Deactivation of one 18 PMAI squadron
- Realignment of two 18 PMAI squadrons to 24 PMAI squadrons by adding 6 F-16 Block 50 aircraft each from the deactivated squadron
- Maintenance of the existing 24 PMAI squadron
- Reduction of manpower authorizations by approximately 300

Tables 2-1 through 2-4 depict aircraft, aircraft use, manpower requirements, ordnance, chaff and flare use under Alternative A.

## **2.3 ALTERNATIVE B: NO-ACTION ALTERNATIVE**

Under the No-Action alternative, there would be no force structure realignment or deactivation at Shaw AFB. The 20<sup>th</sup> FW would maintain the current three 18 PMAI squadrons and one 24 PMAI squadron for a total of 78 aircraft. Maintaining the existing Wing structure would not promote the additional desired flexibility inherent in 24 PMAI squadrons for AEF deployments. Additionally, it would not permit initiation of the CCIP desired to improve the combat capability of the active duty F-16 fleet.

The current flying schedule and associated ordnance training used by the 20<sup>th</sup> FW today would continue under the No-Action alternative and no manpower authorizations would be reduced. The key elements of the No-Action alternative are:

- Maintenance of existing squadron structure - three 18 PMAI squadrons and one 24 PMAI squadron (no deactivation)
- Maintenance of current manpower authorizations

Tables 2-1 through 2-4 provide a comparison of the No-Action alternative to the proposed action and Alternative A in the key areas.

## **2.4 ENVIRONMENTAL IMPACT ANALYSIS PROCESS**

The environmental impact analysis process includes the review of all information pertinent to the proposed action and reasonable alternatives and provides a full and fair discussion of potential consequences to the natural and human environment. The process includes involvement with the public and agencies to identify possible consequences of an action, as well as the focusing of analysis on environmental resources potentially affected by the proposed action or alternatives.

### **2.4.1 Scope of Resource Analysis**

The proposed action and Alternative A would involve an overall decrease in the number of aircraft, sorties, and personnel at Shaw AFB. These changes may affect several environmental resources, including socioeconomics, transportation, and land use. Since aircraft activity in the affected airspace would change, noise, air quality, airspace management, and safety resources

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may be affected. Changes in overflights and in noise have the potential for affecting biological resources, cultural resources, and environmental justice. The proposed action involves no construction or ground-disturbing activities and thus would have no effect on visual, hazardous waste, earth, or water environmental resources. Chapter 3.0 presents the affected environment for airspace management, noise, safety, air quality, land use and transportation, biological resources, cultural resources, and socioeconomics and environmental justice. Chapter 4.0 presents the consequences of these environmental resources. At the end of this chapter, a comparison of environmental consequences is presented (refer to section 2.5).

#### **2.4.2 Public and Agency Involvement**

Press releases were issued by ACC and Shaw AFB in March 2002 announcing the proposed force structure changes. Press releases were provided to media within the Shaw AFB area. In June 2002, the Air Force contacted local, state, tribal, and federal agencies to inform them of the Air Force intent to prepare an EA for the proposed Force Structure Change at Shaw AFB (refer to Appendix A). Through this scoping process, the Air Force obtained information regarding pertinent environmental issues the agencies felt should be addressed in the environmental impact analysis. Community leaders and legislative representatives from potentially affected communities in South Carolina were contacted. Key contacts were notified for states underlying the airspace. Agency consultations were undertaken with regard to cultural resources and regarding biological resources, primarily for compliance with the Endangered Species Act (ESA).

To facilitate public involvement in this project, the Air Force prepared and published newspaper advertisements announcing the availability of the Draft EA for public and agency review. In addition, the 20<sup>th</sup> Fighter Wing Public Affairs office distributed a September 20, 2002 news release to their media outlets. The Draft EA was also posted on the Shaw AFB website at [www.shaw.af.mil](http://www.shaw.af.mil).

A public comment period on the Draft EA extended from September 19 to October 18, 2002. Appendix A includes two agency letters received during this period. The Final EA is available to the public at area libraries, at Shaw AFB and on the Shaw AFB website.

#### **2.4.3 Regulatory Compliance**

This EA has been prepared to satisfy the requirements of NEPA (Public Law [P.L.] 91-190, 42 USC 4321 et seq.) as amended in 1975 by P.L. 94-52 and P.L. 94-83. The intent of NEPA is to protect, restore, and enhance the environment through well-informed federal decisions. In addition, this document was prepared in accordance with Air Force Instruction (AFI) 32-7061, which implements Section 102 (2) of NEPA and regulations established by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500-1508; 32 CFR Part 989).

Implementation of the proposed action or an alternative would require concurrence from several regulatory agencies. Compliance with the ESA involves communication with the Department of the Interior (delegated to the U.S. Fish and Wildlife Service [USFWS]) in cases where a federal action could affect the listed threatened or endangered species, species

proposed for listing, or species that could be candidates for listing. A letter was sent to the appropriate USFWS agencies as well as their state counterparts, informing them of the proposed action and alternatives and requesting data regarding applicable protected species. Since no adverse effects are anticipated, further consultation is not required.

The preservation of cultural resources falls under the purview of State Historic Preservation Office (SHPO), as mandated by the National Historic Preservation Act (NHPA) and its implementing regulations. A letter was sent to the South Carolina SHPO and the Catawba Tribe informing them of the proposed action and alternatives.

Appendix A includes copies of relevant coordination letters. Appendix D includes letters regarding protected species provided by interested agencies.

#### 2.4.4 Permit Requirements

This EA has been prepared in compliance with NEPA; other federal statutes, such as the Clean Air Act (CAA) and the Clean Water Act; Executive Orders (EOs), and applicable state statutes and regulations. Table 2-5 summarizes applicable federal, state, and local permits and the potential for change to the permits due to the proposed action or alternatives.

**Table 2-5. Environmental Related Permitting**

<i>Permit</i>	<i>Resource</i>	<i>Proposed Action</i>	<i>Alternative A</i>	<i>Alternative B: No-Action</i>
<b>Active Construction Permits<sup>1</sup></b>				
Operational Weather Squadron Construction Permit	Storm Water	○	○	○
Dining Facility Construction Permit	Storm Water	○	○	○
Education Center Construction Permit	Storm Water	○	○	○
<b>Other Permits</b>				
Title V Operating Permit	Air	○	○	○
Shaw AFB Drinking Water Permit	Water	○	○	○
Poinsett Drinking Water Permit	Water	○	○	○
Shaw AFB NPDES Waste Water Treatment	Waste Water	○	○	○
Shaw AFB NPDES Storm Water	Storm Water	○	○	○
Wateree NPDES Waste Water	Waste Water	○	○	○
Shaw AFB Non Discharge (Sludge Disposal)	Waste Water	○	○	○
Septic Tanks at Shaw and Poinsett	Waste Water	○	○	○
Shaw AFB Hazardous Waste Permit	Hazardous Waste	○	○	○
Underground Storage Tank Registration Certification	UST	○	○	○

Note: 1. Permit for Construction Sites Disturbing More than 2 Acres.

● = Permit change potentially needed.

○ = No permit change needed.

● = Permit change needed.

Because of the nature of this force structure change, no specific permits are required. However, during the course of this environmental assessment process, a list of existing Shaw AFB permits was compiled and reviewed.

In addition to this EA being prepared for the decisionmaker and the interested public, it is also a tool for Air Force personnel to ensure compliance with all regulatory requirements from proposal through project implementation.

## 2.5 COMPARISON OF ALTERNATIVES

Table 2-6 summarizes the potential environmental impacts of the proposed action and alternatives, based on the detailed impact analyses presented in Chapter 4.0.

**Table 2-6. Summary of Potential Environmental Consequences**

<i>Resources</i>	<i>Proposed Action</i>	<i>Alternative A</i>	<i>Alternative B: No-Action Alternative</i>
Airspace Management	+	+	○
Noise	+	+	○
Safety	+	+	○
Air Quality	+	+	○
Land Use and Transportation	+	+	○
Biological Resources	+	+	○
Cultural Resources	+	+	○
Socioeconomics and Environmental Justice	+/-	+/-	○

Consequences:

○ = No change.

+ = Beneficial or not discernible.

- = Adverse but not significant.